

Bacterial Microscopy
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I would like to report that our students have been able to learn more about the importance of bacteria in the context of the aquatic environment. The class that participated this year was our Marine Sciences class. After introductory talk about planet Earth as a one cell dominated planet, students were introduced to several types of Archea and Bacteria. They were able to connect bacteria to their own well being and understand that some micororganisms can be harmful. The students were introduced to microbes using the video clip on the CMORE website, Students watched clips from the PBS series Intimate strangers; Unseen life on Earth. Students were assigned selected text readings about microbes. Students built Winogradsky columns.

We collected soil from a stream in back of the school. We had just experienced major flooding after Hurricane Lee (our school was closed for two days) and found a very nice deposition of some very silty soil, very homogenous. It was also gravel free making it easy to work with. We mixed the soil with shredded paper and nutrients before filling the columns. We then put the columns under grow lights for 22 hours a day. Students recorded bacterial growth daily in a journal, they wrote descriptions and illustrated what occurred as colonies of bacteria began to appear. Students read the CMORE brochure: “ Key Concepts in Microbial Oceanography”.

Bacteria began to grow after about two weeks. Students found mostly black spots on the sides in the middle of the columns. After about four weeks some of the columns began to show iron reducing bacteria at the top and green algae. Students spent time with the newly equipped microscopes, learning how to focus with a 100x oil immersion lens. We were able to only outfit six of our microscopes due to requirements of proper lighting and stage upgrades. Our microscope repairman recommended that we not put 100x lens on standard microscopes as they do not have condenser lighting or mechanical stages. He installed mechanical stages on 6 microscopes that we had luckily purchased with condenser lighting. Students are working 3 to a microscope. I am just going to order a better microscope each year until we have enough for no more than one to two students to a microscope. This is why we did spend our entire grant. Maybe We will apply again with another project. I thought it a waste of money to buy all the lenses and not use them right away.

Student practicing going to 100x, using gram negative Spirillum slide. We are going to keep the columns going for anther few weeks to allow for more layers to develop. We are hoping for more Sulfur reducing bacteria to reproduce at the bottom of the column. We will be hopefully preparing slides in the next few weeks. First I am hesitant to have high school students collect bacteria from the columns, instead we will now be preparing agar plates and will grow plant rot off of an apple I have rotting in the classroom. We will then fix slides and stain them with a gram stain kit from Flinn scientific. We appreciate the funding and this has helped boost out microbial research at our high school.